CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

SELECT PERIOD June 2013

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Beyond BioVector: Can cold-tolerant nematodes effectively manage Diaprepes root weevil in advanced citrus production systems?

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
9/23/13	Citrus Research and Development Foundation	Epidemiology and Cultural Control

REPORT UPDATE (500 words-It is not necessary in this public report to disclose your institution's proprietary information or intellectual property.)

We conducted 3 assays to compare the effectiveness of a commercially available entomopathogenic nematode (EPN) species Heterorhabditis bacteriophora to that of Steinernema riobrave which is documented to be the most effective EPN pathogen of Diaprepes abbreviatus, but is not currently available commercially. In the basic assay, weevil larvae are preconditioned at 10 C or 27 C for 48 h. Then weevil larvae are exposed to very low rates (2 nematodes/cm2 soil surface) of EPNs at 18 C or 27 C for 6 days, during which mortality is evaluated at 2 day intervals. Thus, temperature regimes of 10C+18C simulate a wintertime cold event and 27C+27C simulates summertime conditions. Results of these trials revealed that:

1. H. bacteriphora was 50% as effective as S. riobrave in summer.
2. S. riobrave was 10% more effective in winter than it was with nonstressed weevils during summer
3. H. bacteriophora was 60% more effective in winter than it was with nonstressed weevils during summer
4. H. bacteriophora was 80% as effective in winter as Sr was with nonstressed weevils during summer

We subsequently obtained an isolate of H. bacteriophora from upstate New York. In a single trial, not yet repeated, the New York isolate was somewhat more effective than the commercial isolate of H. bacteriophora during simulated winter cold events.

We most recently obtained a commercial product containing Steinernema krauseii a temperate species capable of infecting hosts at temperatures as low as 8 C. In a single trial, not yet repeated, S. krauseii was ineffective against weevils under simulated summertime conditions. It was much more effective in the cold temperature regime, but inferior to H. bacteriophora and S. riobrave in its ability to kill weevil larvae.

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Organization UF, IFAS, CREC

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Form PR-12 Quarterly Reports **SUBMIT REPORT**

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.